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PURCHASE DESCRIPTION

HOWITZER, MEDIUM, SELF-PROPELLED: 155-MM, M109A2, M109A3, M109A4, AND M109A5; PROCESSING FOR STORAGE AND SHIPMENT OF

This purchase description is approved for use by the U.S. Army Tank-automotive and Armaments Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This purchase description covers the processing of the Howitzer, Medium, Self-Propelled: 155-mm, M109A2, M109A3, M109A4, and M109A5 for domestic or overseas shipment and storage.

1.2 Classification. Processing will be of the following levels of protection (see 6.2).

Level A: Maximum protection. Maximum protection, called Level A, is processing for domestic and overseas shipment and any outside storage in excess of 90 days from the date of processing (periodic care and additional preservation is required during storage).

Level B: Intermediate protection. Intermediate protection, called Level B, is processing, for immediate use shipment and for domestic and overseas shipment (excluding open deck loading) and for any storage not to exceed 90 days from the date of processing.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

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2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this purchase description. This section does not include documents cited in other sections of this purchase description or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirement documents cited in sections 3 and 4 of this purchase description, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

A-A-203	- Paper, Kraft, Untreated.
A-A-374	- Sodium Bicarbonate, Technical.
A-A-870	- Engine Antifreeze/Coolant: Inhibited, Concentrated, Ethylene Glycol.
A-A-883	- Tape, Pressure Sensitive Adhesive, Masking.
A-A-1898	- Cushioning Material, Cellulosic, Packaging.
A-A-50177	- Paper, Lens.
A-A-52518	- Tire, Pneumatic: Retread and Repair Materials (Metric).
A-A-52557	- Fuel Oil, Diesel; For Posts, Camps and Stations.
L-P-378	- Plastic Sheet and Strip, Thingage Polyolefin.
O-E-760	- Ethyl Alcohol (Ethanol); Denatured Alcohol; Proprietary Solvent and Special Industrial Solvents.
O-S-801	- Sulfuric Acid, Electrolyte (for Storage Batteries).
P-D-220	- Detergent, General Purpose.
PPP-B-601	- Boxes, Wood, Cleated Plywood.
QQ-A-1876	- Aluminum Foil.
VV-L-800	- Lubricating Oil, General Purpose, Preservative (Water Displacing, Low Temperature).

DEPARTMENT OF DEFENSE

MIL-B-117	- Bags, Sleeves and Tubing.
MIL-B-121	- Barrier Material, Greaseproofed, Waterproofed, Flexible.
MIL-C-450	- Coating Compound, Bituminous Solvent Type, Black (for Ammunition).
MIL-P-3420	- Packaging Materials, Volatile Corrosion Inhibitor Treated, Opaque.
MIL-H-6083	- Hydraulic Fluid, Petroleum Base, for Preservation and Operation.
MIL-PRF-10924	- Grease, Automotive and Artillery.
MIL-PRF-16173	- Corrosion Preventive Compound, Solvent Cutback, Cold-Application.
MIL-D-16791	- Detergents, General Purpose (Liquid, Nonionic).
MIL-L-21260	- Lubricating Oil, Internal Combustion Engine, Preservative and Break-in.
MIL-T-22085	- Tapes, Pressure-Sensitive Adhesive, Preservation and Sealing.
MIL-T-37402	- Tester, Antifreeze Solutions.
MIL-P-46002	- Preservative Oil, Contact and Volatile Corrosion Inhibited.
MIL-T-50036	- Talc, Technical, Tl and T3.
MIL-D-81298	- Dye, Liquid, for the Detection of Leaks in Aircraft Fuel Systems.

STANDARDS

DEPARTMIENT OF DEFENSE

MIL-STD-129	- Marking for Shipment and Storage.
MIL-STD-209	- Slinging and Tiedown Provisions for Lifting and Tying Down Military Equipment.
MIL-STD-2073-1	- Military Packaging, Standard Practice for.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless other-wise specified, the issues are those cited in the solicitation.

DRAWINGS

ARMY

12260160	- Platform Installation, OVE Saddle.
12260161	- Platform Assembly, OVE Saddle.
12260206	- Closure Kit, Vehicle Protective.
12260223	- Ventilation Kit-Shipping and Storage.
12260224	- Installation Instructions, Ventilation Kit-12260223.

PUBLICATIONS

ARMY

LUBRICATION ORDER

LO 9-2350-311-12 - Lubrication Order, Howitzer, Medium, Self-Propelled: 155-mm, M109A2, M109A3, M109A4, and M109A5.

TECHNICAL MANUALS

TM 9-2350-31 1-10 - Operator's Manual for Howitzer, Medium, Self-Propelled, 155-mm, M109A2 (NSN 2350-01-031-0586), M109A3 (NSN 2350-01-031-8851), M109A4 (NSN 2350-01-277-5770), and M109A5 (NSN 2350-01-281-1719).

TM 55-2350-217-15-1 - Transportability Guidance for Howitzer, Light, Self-Propelled: 105-mm, M108 (NSN 2350-00-440-8810), Howitzer, Medium, Self-Propelled: 155-mm, M109 (NSN 2350-00-440-881), Howitzer, Medium, Self-Propelled: 155-mm, M109Al (NSN 2350-00-485-9662).

(Copies of these drawings and publications are available from the U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCEETY FOR TESTING AND MATERIALS (ASTM)

ASTM D3950	- Standard Specification for Strapping, Nonmetallic (and Joining Methods).
ASTM D4675	- Standard Guide for Selection and Use of Flat Strapping Materials (DoD Adopted).
ASTM D5118	- Standard Practice for Fabrication of Fiberboard Shipping Boxes (DoD Adopted).
ASTM D5330	- Standard Specification for Pressure-Sensitive Tape for Packaging, Filament Reinforced (DoD Adopted).
ASTM D5486	- Standard Specification for Pressure-Sensitive Tape for Packaging, Box Closure, and Sealing (DoD Adopted).

(Application for copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

DEPARTMENT OF TRANSPORTATION (DoT)

Hazardous Materials Regulations

(Application for copies may be obtained from the Superintendent of Documents, U.S. Printing Office, Washington, DC 20402.)

ASSOCIATION OF AMERICAN RAILROADS (AAR)

Section No. 1	- General Rules Governing Loading of Commodities on Open Top Cars.
Section No. 6	- Rules Governing the Loading of Department of Defense Materiel on Open Top Cars.

(Applications for copies may be obtained from the Association of American Railroads, 50 F Street Northwest, Washington, DC 20001-1564.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 4.3).

3.2 Equipment. Equipment selected for processing of the vehicle shall be sufficient and safe when used for the intended purpose.

3.2.1 Preservative container assembly. A preservative container assembly shall be provided for Level A processing of the fuel system (see figure 1).

3.2.1.1 Preservative container. A preservative container with valves for flow regulation, fittings, and a hose with a fitting for connection to the filter assembly shall be provided for Level A processing of the fuel system (see figure 1).

3.2.2 Atomizer. An atomizer shall be provided for Level A processing of lubricant gauge openings, air intake opening, and exhaust opening.

3.3 Materials. Materials selected for use in processing the vehicle shall be sufficient and safe when used for the intended purpose.

3.3.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs (see 6.5.2).

3.3.2 Detergent solution. Detergent for cleaning of non-critical surfaces shall be in accordance with P-D-220 or type I of MIL-D-16791. The detergent shall be in solution with clean water.

3.3.3 Optical glass cleaning solution. Optical cleaning shall be accomplished using ethyl alcohol conforming to O-E-760.

3.3.4 Antifreeze solution. Antifreeze solution shall consist of equal parts by volume of water and antifreeze (ethylene glycol) conforming to A-A-870.

3.3.5 Preservative dye. An oil soluble red dye conforming to MIL-D-81298 shall be added to the preservative oil used for the fuel system and combustion chamber processing as required for inspection only. The concentration of dye shall be sufficient to impart a marked coloring to the oil (see 4.4).

3.4 Procedures and operations. Procedures and operations shall consist of general requirements and special requirements. General requirements shall apply to all levels of protection (see 3.4.1); special requirements shall apply for the specified level of protection (see 3.4.2).

3.4.1 General requirements. DA Form 2258 shall be completed to record the preservation applied and deprocessing required for each vehicle. Completed forms shall be sealed within a bag, conforming to type 1, class B, style 2 of MIL-B-117 and attached within the driver's compartment.

3.4.1.1 Disassembly. Except as otherwise specified herein, each vehicle shall be prepared for storage and shipment in a completely assembled condition after test runs and after completion and approval of all necessary repairs. Specified equipment shall be installed and all adjustments made so that the vehicle may be placed into service with a minimum of delay.

3.4.1.1.1 Disassembly for normal transport. Unless otherwise specified (see 6.2), the items listed in tables I, II, and III shall be removed from the vehicle. Disassembly shall be in accordance with the applicable manuals. Items removed from the vehicle for normal transport shall be configured for packaging, stowage, and securement aboard the vehicle (see figures 2 and 3).

3.4.1.1.1.1 Muzzle brake removal, OCONUS shipment. The muzzle brake shall be removed only for shipment between CONUS and OCONUS shipping points.

TABLE I. Preservation and storage of components of end item (COEI).

Identification number	Item description	Method of preservation	Stowage location (figures 2 & 3)
1025-01-202-0418	Arm, Adapter Assembly	10	A
1005-00-704-6650	Mount, Machine Gun, Cal.50	10	A
1240-00-344-4643	Periscope, M27	44	(Installed)
1240-00-509-2743	Periscope, M45	44	(Installed)
1240-01-092-2693	Telescope, Elbow M118A2	44	(Installed)
1240-00-864-2930	Telescope, Panoramic M117	44	C
1240-00-106-7754	Telescope, Panoramic M117A2	44	C

TABLE II. Preservation and storage of basic issue item (BII).

Identification number	Item description	Method of preservation	Stowage location (figures 2 & 3)
4930-00-204-2550	Adapter, Grease Gun Thin Stem	31	B
4933-00-087-1267	Adapter, Gun, Oil Filling	31	B
4931-01-187-9713	Alignment Device M140 w/Case	41	B
2540-00-670-2459	Bag Assembly, Pamphlet	32	B
5140-00-473-6256	Bag, Tool Satchel	31	B
1025-00-860-5446	Belt, Primer M8	32	B
1025-01-196-2176	Brush and Bag Assembly	10	B
4933-00-730-7183	Brush, Cleaning Primer	31	B
7240-00-242-6153	Can, Water Military 5 Gal Std	10	B
1240-00-654-6089	Chest, M14	20	B
4933-00-601-9667	Cleaning Tool, Vent	10	
1240-00-332-1780	Collimator, Infinity Aiming Reference M1Al	41	B
1290-00-653-7993	Cover, Aiming Post	10	B
1025-01-054-5781	Cover, Muzzle Brake Sewn	31	B
5120-00-224-1390	Crowbar Pinch Point, 5 Ft Lg, 1-1/4 W	10	B
5110-00-595-8229	Cutter, Wire Rope, Hand	10	B
5120-00-243-7326	Extension, Socket Wrench 1/2 Dr, 5 Lg	10	B

TABLE II. Preservation and storage of basic issue item (BII) - Continued.

Identification number	Item description	Method of preservation	Stowage location (figures 2 & 3)
4210-00-270-4512	Extinguisher, Fire, C02 Portable, 3 lb	10	B
1025-01-082-3586	Extractor Assembly	41	E
5110-00-156-0059	File, Hand Smooth, 10 Lg	10	B
1025-01-292-0960	Firing Mechanism, M49 (MI09A5 only)	41	B
6545-00-922-1200	First Aid Kit, General	10	B
5120-00-605-3926	Fixture, Track Connector	32	B
6230-00-264-8261	Flashlight Operated	10	B
7510-01-065-0166	Folder, Equipment Record	10	B
1290-00-764-7761	Fuze Setter, M27	20	B
1290-00-078-4367	Fuze Setter, M34	20	B
1290-00-201-3507	Fuze Setter, M35	20	B
4933-00-550-6661	Gun, Fluid, Direct Delivery, Oil M3	20	B
5120-00-061-8546	Hammer, Hand Machinist's 2 Lb Ball Peen	20	B
5120-00-236-7590	Handle, Socket, Wrench Hinged 1/2 Dr, 17 Lg	31	B
1030-00-859-4511	Holder, Chamber, Swab Sponge	20	B
4720-00-289-6335	Hose Assembly, Non-Metallic	31	B
4720-00-277-8982	Hose, Non-Metallic 24 In Lg	41	B
5120-00-198-5390	Key, Socket Head Screw 3/8	31	B
5120-00-240-5274	Key, Socket Head Screw 5/16	31	B
5120-00-240-5300	Key, Socket Head Screw 3/16	31	B
1025-00-600-6780	Lanyard 6 Ft	31	B
1095-00-610-9018	Lanyard 50 Ft	31	B
1290-01-148-4821	Light, Aiming Post M14	41	B
----------	L09-2350-311-12	31	B
4930-00-766-3545	Lubricating, Gun, Hand High Pressure	32	B
8415-01-092-0039	Mitten, Heat Protective M1942	31	B
4930-00-262-8868	Oiler, Hand Steel, Pump Type, 1 Pt, Spout, 9 Lg	32	B
1015-01-012-8271	Pad, Obturator	31	B
5340-00-158-3807	Padlock Series 200	10	B

TABLE II. Preservation and storage of basic issue item (BII) - Continued.

Identification number	Item description	Method of preservation	Stowage location (figures 2 & 3)
7240-00-160-0455	Pail, Utility 14 Qt	10	B
8345-00-174-6865	Panel Marker Signal, Grd to Air	32	B
1240-00-509-2743	Periscope M45 (Driver's)	44	B
1025-00-860-9169	Pin, Firing Retainer	20	B
5120-00-239-8251	Pliers, Linesman Side Cut, 8 Lg	10	B
1290-00-535-7617	Post, Aiming M1A2	10	B
5120-00-918-0596	Puller, Connector Track	32	B
1290-00-891-9999	Quadrant, Fire Control Gunner's M1A1 w/Case	10	B
1025-00-860-5443	Rammer, Artillery, Unloading	20	B
1030-00-730-7416	Rammer, Loading M13	10	B
4933-01-026-5253	Reamer Assembly	41	B
4730-00-804-1907	Reducer, Tube	41	B
5340-01-302-4250	Retainer, Firing Pin	41	B
5365-00-861-1467	Ring, Split, Front	10	B
5120-00-596-8502	Screwdriver, Flat Tip Special Purpose, 1/4 Tip w/Blade 1-1/2 Long	10	B
5120-00-236-2140	Screwdriver, Flat Tip Special Purpose, 1/8 Tip w/Clip 1-1/2 Long	10	B
4933-00-860-5445	Sight, Bore Breech	41	B
5120-00-189-7927	Socket, Socket Wrench 1/2 Dr x 1, 12 Pt x I Opng	31	B
5120-00-189-7932	Socket, Socket Wrench 1/2 Dr, 12 Pt x 9/16 Opng	31	B
5120-00-237-0984	Socket, Socket Wrench 1/2 Dr, 12 Pt x 1/2 Opng	31	B
1025-00-563-7232	Staff Section, Cleaning Artillery M15A1	10	B
1025-01-232-6822	Swab, Chamber	31	B
5340-01-318-0197	T-Handle	31	B
2540-00-653-7589	Tarpaulin w/Ropes	10	B
----------	TM 9-2350-311-10	31	B
5110-00-221-1499	Wire, Nippers	20	B

TABLE II. Preservation and storage of basic issue item (BII) - Continued.

Identification number	Item description	Method of preservation	Stowage location (figures 2 & 3)
4010-00-202-2425	Wire Rope Assembly Towing Cable 1-1/8 x 10 Ft Lg	20	B
5120-00-240-5328	Wrench, Adjustable Single End, 15/16, 8 Lg	31	B
5120-00-264-3796	Wrench, Adjustable Single End, 15/16, 12 Lg	31	B
4933-00-723-1161	Wrench, Fuze Setter M18	41	B
5120-00-293-0206	Wrench, Spanner	41	B
5120-00-446-3750	Wrench, Spanner Obturator Nut	31	B

TABLE III. Preservation and storage of disassembled items shipped with the vehicle.

Identification number	Item description	Method of preservation	Stowage location (figures 2 & 3)
5340-00-010-3797	Cover, Access	10	D
5340-00-986-8674	Cover, Access	10	D
----------	Electrolyte	0-S-801	G
5330-00-878-6179	Gasket	31	D
5330-00-080-1492	Gasket	31	D
1025-00-955-9454	Muzzle Brake	20	H
5330-00-844-2447	Packing, Preformed	31	D
2910-00-837-1580	Plate	10	D
2510-00-081-1138	Stowage Basket (Left)	10	F
2510-00-081-1137	Stowage Basket (Right)	10	F
2540-01-079-3087	Stowage Boxes	10	F
2540-00-706-8219	Tow Hooks	10	I

3.4.1.1.2 Disassembly for special transport modes. When specified (see 6.2), additional disassembly shall be in accordance with the vehicle's transportability guidance technical manual (TM 55-2350-217-15-1) for the specified mode of transport.

3.4.1.2 Cleaning and drying. Unless otherwise specified herein, each vehicle surface and each disassembled component shall be cleaned in accordance with selected cleaning processes as specified in MIL-STD-2073-1. Materials, equipment, and processes shall be selected which are sufficient and safe when used for the intended purpose. Any item damaged by cleaning or drying shall be replaced or repaired.

3.4.1.2.1 Interior of vehicle. Interior surfaces of vehicle shall be cleaned with a solution of detergent conforming to P-D-220 or type I of MIIL-D-16791 and warm water. Water or other liquid under pressure, or steam cleaning shall not be used. After cleaning, cleaned surfaces shall be rinsed with clean water and dried. Care shall be taken during cleaning and rinsing to ensure that no liquids enter instruments, connections, or other components susceptible to water damage and that water does not accumulate in areas where it cannot drain or be dried.

3.4.1.2.1.1 Battery supports and retainers. Battery supports and retainers shall be cleaned with a solution of one-half pound of sodium bicarbonate conforming to A-A-374 per gallon of water. After cleaning, cleaned surface shall be flushed with clean water and thoroughly dried.

3.4.1.2.1.2 Backrests and seats. Backrest and seat cushions shall be cleaned with a solution of detergent conforming to P-D-220 or type I of MIL-D-16791 and warm water. After cleaning, cushions shall be wiped with a cloth saturated with clean water to remove cleaning solution. Care shall be taken not to saturate the cushions with cleaning solution or water. After rinsing, cushions shall be thoroughly dried.

3.4.1.2.1.3 Fire control items. Exposed optical glass components of fire control items shall be cleaned and dried in accordance with good commercial practice for optics.

3.4.1.2.2 Exterior of vehicle. Exterior surfaces of the vehicle shall be cleaned with a solution of water and detergent conforming to P-D-220 or type I of MIL-D-16791. After cleaning, surfaces cleaned shall be rinsed with clean water and thoroughly dried. Exterior of vehicle shall be cleaned without permitting entry of steam or water into driver's, crew, or engine compartments. If pressure spraying equipment is used in the cleaning process, the control regulation of the spraying equipment and the method of spray cleaning shall be sufficient to prevent damage.

3.4.1.2.2.1 Cannon. The cannon shall be cleaned and dried by any suitable process or processes which are not injurious to the cannon.

3.4.1.3 Preservation. Unless otherwise specified (see 6.2), each vehicle surface and component which is susceptible to corrosion or deterioration by environmental conditions shall be protected by application of selected preservatives in accordance with MIL-STD-2073-1. Preservative materials, equipment, and processes shall be selected which are sufficient and safe when used for the purpose intended. Selected preservatives shall be compatible with the item composition and intended use. Preservation shall be completed immediately after cleaning and drying. Any item damaged by preservation shall be replaced or repaired.

3..4.1.3.l COEI, BII, and disassembled items. COEI, BII, and disassembled items shall be protected by methods of preservation in accordance with MIL-STD-2073-1 (see tables I, II, and III).

3.4.1.3.2 Operational fluids and lubricants. Each vehicle and its components shall conform to their respective operational fluid and lubricant requirements. Contaminated fluids and lubricants shall be removed and properly disposed. Operational fluids and lubricants shall be applied in accordance with LO 9-2350-311-12, drawings, and documents applicable to the vehicle components. Any excess operational fluid or lubricant shall be removed and properly disposed.

3.4.1.3.2.1 Lubrication of fittings and surfaces. After cleaning and drying, lubrication shall be applied to the following points:

a. Cab - race ring bearings.
b. Cab - race ring bearings (race ring surface only).
c. Cab side door latches.
d. Cannon, bore, breech, firing mechanism, and support lugs.
e. Cradle cam grooves.
f. Elevating cylinder exposed piston rod.
g. Elevating cylinder hinge.
h. Engine mount clamping screw.
i. Engine mounting bracket lock pin.
j. Equilibrator chain and adjusting screw.
k. Evacuator balls, vent seats, and holes (not on M109A5) - clean and preserve with CLP.
l. Evacuator balls, ring, and tube surface (not on M109A5) - lubricate with grease GMD or GGP.
m. Gun elevating mechanism.
n. Gun mount - cam hinge pin (two fittings).
o. Gun travel lock support hinge.
p. Idler wheel hub studs.
q. M140 alignment device dovetail mount.
r. Muzzle brake.
s. Pintle.
t. Rammer blocking valve plunger and roller.
u. Rammer support.
v. Roadwheel hub studs.
w. Speedometer adapter housing.
x. Sprocket hub, final drive.
y. Steer shaft bushing.
z. Torsion bar anchors.
aa. Torsion bar plugs.
ab. Tow cable.
ac. Track adjusters.
ad. Transmission and final drive breathers.

ae. Traversing gear box top bearings.
af. Traversing mechanism.
ag. Traversing mechanism - drive pinions.
ah. Universal joint - transmission to final drive.

3.4.1.3.2.2 Lubrication of oil can points. Lubrication shall be applied to the following oil can points:

a. Accelerator and throttle linkage.
b. Access cover (fuel, radiator, and engine oil) - hinges, latches, and pins (3 places).
c. Access doors and grilles - hinges and latches (13 places).
d. Ammo racks - hinges.
e. Brake linkage.
f. Bustle doors - hinges, slides, and latches.
g. Cab and hull doors - hinges and latches.
h. Cab - traverse lock.
i. Cable reel (telephone).
j. Commander's seat - moving parts.
k. Cupola hatch - hinges, handles, shafts, and latch.
l. Driver's hatch - hold open latch, cover lock.
m. Driver's hatch - operating lever.
n. Driver's seat - moving parts.
o. Gun travel lock - hinges and latch.
p. Gunner's escape - hatch, latch, and hinges.
q. Loader's seat - hinges.
r. M140 cover and latches.
s. Machine gun mount and cradle locking pins.
t. M42 Offset periscope cover - hinge and pin.
u. Panoramic telescope mount latches.
v. Periscope covers - hinges.
w. Periscopes retaining latches.
x. Portable fire extinguisher bracket.
y. Projectile rack caps and spacers (31 places).
z. Rammer actuating valve.
aa. Rammer - shafts and hinge pins.
ab. Spade - catch, pins, and hinges.
ac. Spade - lock, lever, and latch.
ad. Steering linkage.
ae. Stowage boxes - latches and handles.
af. Tow cable mounting bracket.
ag. Transmission shifting linkage.
ah. Weather cover spring and pin.

3.4.1.3.3 Transmission, transfer assembly, and final drives. The transmission shall contain lubricating oil only conforming to MIL-L-21260 of the grade specified in the applicable drawing, specification, or lubrication order and filled to operating level. The transfer assembly, and final drives shall contain lubricating oil conforming to MIL-L-21260 of the seasonal grade specified in the applicable drawing, specification, or lubrication order and filled to operating level.

3.4.1.3.4 Engine crankcase. The crankcase shall be filled to operating level with lubricating oil conforming to MIL-L-21260 of the seasonal grade specified in the applicable drawing, specification, or lubrication order.

3.4.1.3.5 Cooling system. Unless arctic or tropic processing is specified (see 6.2), the cooling system shall contain a clean solution consisting of equal parts by volume of antifreeze (ethylene glycol) conforming to A-A-870 and water and filled to capacity. The engine shall be operated until a temperature has been reached that causes the thermostat to open and ensures complete mixing and even distribution of the antifreeze solution. The coolant shall show protection to minus (-) 40 degrees Fahrenheit (°F) (-40 degrees Celsius (°C)) (see 4.5.3).

3.4.1.3.5.1 Tropic preparation of cooling system. When specified for shipment and storage in a tropic environment, the cooling system shall contain the coolant specified in the contract or order (see 6.2 and TM 9-2350-311-10).

3.4.1.3.5.2 Arctic preparation of cooling system. When specified for shipment and storage in an arctic environment, the cooling system shall contain the coolant specified in the contract or order (see 6.2 and TM 9-2350-311-10).

3.4.1.3.6 Fire control items.

3.4.1.3.6.1 Quadrant, periscope, and telescope. Immediately after cleaning, optics shall be covered with a four-layer thickness of lens tissue conforming to A-A-50177. The lens tissue shall be secured with tape conforming to type II of MIL-T-22085. All exposed, unpainted metal surfaces shall be coated with grease conforming to MIL-PRF-10924.

3.4.1.3.6.2 Vehicles with panoramic telescope ballistic cover assembly installed. Ballistic glass will be covered with 0.50 inch (in.) (12.7 millimeters (mm)) plywood, sealed along edges with tape conforming to ASTM D5486, type 1, class 1. Secure with nonmetallic strapping, in accordance with ASTM D3950 and ASTM D4675. Ballistic cover assembly will be turned 90 degrees to the right to reduce the possibility of damage.

3.4.1.3.7 Cannon and mount.

3.4.1.3.7.1 Exercising of recoil mechanism. When it has not been exercised, proof fired, overhauled, or manufactured within 4 months prior to preparation for storage or shipment, recoil mechanism shall be exercised a minimum of three extensions of recoil piston. Replenisher assemblies shall be exercised concurrently with the recoil mechanism. After exercising, the replenisher shall be filled to the bleed position with hydraulic fluid conforming to MIL-H-6083, then drained to operating level. The extension shall be a minimum of 6 in. (152.4 mm). The record of exercising shall be entered on DA Form 2408-4 and proof testing of the weapon shall be entered in DA Form 2408-9 (see 3.4.1).

3.4.1.3.7.2 Cannon. Immediately after cleaning, the bore and chamber of the cannon shall be coated with lubricating oil conforming to VV-L-800. Excess preservative shall be allowed to drain from coated surfaces. A strip of volatile corrosion inhibitor (VCI) treated barrier material conforming to class 1, style C, form A of MIL-P-3420 shall be cut and rolled into a tube with the VCI treated surface on the outside. The barrier material shall be of a size that shall provide a continuous cover for the bore and the chamber surface. The rolled barrier material shall be inserted into the cannon extending the entire length of the bore and chamber. The barrier tube shall not be forced or kinked in a manner that will obstruct the chamber. The cannon shall remain in battery with the cannon tube secured in the travel lock position.

3.4.1.3.7.2.1 Muzzle opening. A muzzle plug shall be provided for the muzzle end of the cannon (see figure 4). The muzzle plug shall be inserted securely into the muzzle opening. The muzzle plug shall be secured with tape conforming to type 1, class 1 of ASTM D5486, 2 in. (51 mm) (minimum) wide. For tubes with the muzzle brake installed, three strips of tape shall extend across the muzzle plug, through the muzzle brake openings, and back onto the sides of the muzzle brake for 4 in. (102 mm). The tape shall be reinforced with a circumferential wrap of tape applied a minimum of three full turns over the muzzle brake surfaces. For tubes with the muzzle brake removed, two pieces of tape shall be applied across the center of the plug. The strips shall be perpendicular to each other and extend 4 in. onto the surface of the gun tube. The tape shall be reinforced by applying a strip of tape circumferentially around the joint between the plug and the tubes, and then applying three additional turns of tape around the tube, extending from the muzzle to 4 in. behind the muzzle. The muzzle and (if applicable) muzzle brake shall be covered with a polyethylene bag 0.006 in. (0. 15 mm) thick conforming to type 1, class 1, grade A, finish 1 of L-P-378. The bag shall be of sufficient length to extend a minimum of 10 in. (254 mm) onto the gun tube. The bag shall be secured with strips of 1 x 12 in. (25.4 x 304.8 mm) tape conforming to type 1, class 1 of ASTM D5486. The tape shall be run lengthwise on the top, bottom, and sides of the tube, so that approximately half of each strip is on the bag and half on the painted surface of the tube. Additional tape (6 in. (152 mm) width) of the same material shall be applied around the circumference of the tube to form a continuous seal, extending from the lip of the bag, 3 in. (76 mm) onto the gun tube, and 3 in. onto the bag. Two additional strips of tape

(1 in. minimum width) shall be applied around the circumference of the bag in a manner that divides the bag into three approximate equal length areas and provides additional securement of the bag to the cannon.

3.4.1.3.7.2.2 Breech mechanism. All unpainted surfaces, including phosphated surfaces of the breech block, breech operating mechanism, and firing mechanism, shall be coated with grease conforming to MIL-PRF-10924. The breech block shall be closed.

3.4.1.3.7.3 Recoil mechanism. Accessible machined surfaces of the cannon immediately forward of the recoil mechanism shall be coated with grease conforming to MIL-PRF-10924. Inaccessible machined metal surfaces shall be fogged with lubricating oil conforming to grade 10W of MIL-L-21260. The surface of the recoil mechanism immediately forward of breech ring collar shall be coated with grease conforming to MIL-PRF-10924 and overwrapped with barrier material conforming to grade C of MIL-B-121 and sealed with tape conforming to type I, class 1 of ASTM D5486.

3.4.1.3.7.3.1 Bore evacuator. The front and rear joints of the bore evacuator to the gun tube shall be sealed with tape conforming, to type 1, class 1 of ASTM D5486.

3.4.1.3.7.4 Counter recoil mechanism. After cleaning, coat the exposed unpainted mechanism surfaces of the counter recoil mechanism with grease conforming to MIL-PRF-10924.

3.4.1.3.7.5 Elevating mechanism. Exposed, unpainted surfaces of the elevating rod and connecting pin and the elevating hand crank shaft shall be coated with grease conforming to MIL-PRF-10924.

3.4.1.3.7.6 Traversing mechanism. Exposed, unpainted surfaces of the traversing gear pinion and the traversing hand crank shaft shall be coated with grease conforming to MIL-PRF-10924. The cannon mount travel lock and cab lock shall be secured.

3.4.1.3.7.7 Rammer. Exposed, unpainted surfaces of the rammer cylinder piston rod and assembly shall be coated with grease conforming to MIL-PRF-10924.

3.4.1.3.8 Backrests and seats. Immediately after drying, backrests and cushioned components of seats shall be covered with paper having a minimum basis weight of 40 pounds (lb) (18.1 kilograms (kg)), conforming to style 1 of A-A-203. The paper shall be secured in place with tape conforming to type II of A-A-883.

3.4.1.3.9 Hatches and doors. Rubber seals around hatches and doors shall be coated with powdered talc conforming to type IV, class B of A-A-52518 or talc, technical TI of MIL-T-50036.

3.4.1.3.10 Fire extinguishers. Fire extinguishers shall have a minimum of 90 percent (%) of the rated full charge. All seals shall be intact. All exterior emergency handles shall be covered with tape conforming to type 1, class 1 of ASTM D5486. DA Form 253 or appropriate documentation that states the latest inspection data shall be completed and securely attached to each extinguisher (see 6.4).

3.4.1.4 Packaging. Unless otherwise specified (see 6.2), all COEI, BII, and disassembled items shall be processed in accordance with the methods of MIL-STD-2073-1 specified herein (see tables I, II, and III).

3.4.1.4.1 Tow hooks. Tow hooks and related hardware, except the pintle, shall be removed for shipment and packaged in a box conforming to grade V13c, variety DW of ASTM D5118. The box shall be closed with tape conforming to type 1, class 1 of ASTM D5486.

3.4.1.4.2 Batteries, connecting cables, and battery electrolyte. Batteries, connecting cables, and battery electrolyte shall be processed in accordance with the specified level of protection (see 3.4.2 for special requirements).

3.4.1.5 Packing. Unless otherwise specified (see 6.2), all COEI, BII, and disassembled items shall be consolidated and packed into exterior shipping containers as specified in PPP-B-601. Blocking, bracing, cushioning, and immobilization of the items within the shipping containers shall meet the requirements of MIL-STD-2073-1, including the applicable rough handling tests.

3.4.1.5.1 Stowage baskets, stowage boxes, and muzzle brake. Left and right stowage baskets and stowage boxes shall not be packed for shipment. Stowage boxes shall be nested in stowage baskets. When the muzzle brake is removed for overseas shipment, the muzzle brake shall not be packed. Sufficient cushioning and blocking shall be applied to immobilize the items which are not packed and to prevent damage.

3.4.1.5.2 Access covers and gaskets. The driver's compartment access cover, the transmission access covers, and the gaskets shall be packed in a box conforming to type CF, class WR, grade W6c, Variety SW of ASTM D5118. Blocking, cushioning, and immobilization of the items shall meet the requirements of MIL-STD-2073-1, including the applicable rough handling tests.

3.4.1.6 Marking. Vehicles shall be marked in accordance with MIL-STD-129 (see 6.6). In addition, special markings as specified herein shall be provided when specified (see 6.2).

3.4.1.6.1 Marking of BII. Each unit package and each item not provided with unit packaging shall be marked in accordance with MIL-STD-129 (see 6.6). Exterior shipping containers shall be marked in accordance with MIL-STD-129 and shall contain the identification data: ASSORTED BII FOR NSN, (U.S. ARMY REGISTRATION NUMBER). The NSN and registration number of the vehicle shall be used. Special handling marking shall be applied and packing lists shall be prepared in accordance with MIL-STD-129 (see 6.6).

3.4.1.6.2 Marking of COEI. The unit packaging of each item shall be marked in accordance with MILL-STD-129. Exterior marking of assorted items packed together shall contain the identification data: ASSORTED COEI FOR (NSN), (U.S. ARMY REGISTRATION NUMBER). The NSN and registration number of the vehicle shall be used. Special handling marking shall be applied and packing lists shall be prepared in accordance with MIL-STD-129 (see 6.6).

3.4.1.6.3 Marking of disassembled items. The unit packaging of each item shall be marked in accordance with MIL-STD-129 (see 6.6). Exterior marking of assorted items packed together shall contain the identification data: ASSORTED ITEMS FOR (NSN), (U.S. ARMY REGISTRATION NUMBER). The NSN and registration number of the vehicle shall be used. Special handling marking shall be applied and packing lists shall be prepared in accordance with MIL-STD-129 (see 6.6).

3.4.1.6.4 Marking of additional items. The unit packaging of additional items shipped with the vehicle shall be marked in accordance with MIL-STD-129 (see 6.6). Exterior packs shall be marked in accordance with MIL-STD-129 (see 6.6). Special handling marking shall be applied and packing lists shall be prepared in accordance with MIL-STD-129 (see 6.6).

3.4.1.6.4.1 Marking of closure kit. When a vehicle closure kit is specified (see 3.4.1.8.1), marking of the closure kit box shall be in accordance with MIL-STD-129 (see 6.6). Additional marking of the closure kit shall be as specified in the contract or order (see 6.2).

3.4.1.7 Stowage. Unless otherwise specified (see 6.2), stowage and securement shall conform to the requirements specified herein and meet carrier and transportation requirements. Stowage and securement methods shall be sufficient and safe for the intended purpose. Stowage, securement (including blocking), and bracing shall provide clearance for sling cables and lifting eyes, and shall meet weight and clearance requirements of the shipment medium. Blocking and securement by banding shall prevent movement within the vehicle.

3.4.1.7.1 Stowage of COEI, BII, and disassembled items. Unless otherwise specified (see 6.2), COEI, BII, and disassembled items shall be stowed and secured in the locations specified in tables I, II, III and figure 2. Blocking, bracing, and securement of items shall be sufficient to prevent movement.

3.4.1.7.2 Special stowage. When specified (see 6.2), a platform assembly conforming to Drawing 12260161 shall be installed in accordance with Drawing 12260160. The COEI, BII, and disassembled items shall be stowed and secured in the locations specified in tables I, II, III and figure 3.

3.4.1.8 Closure. Specified openings of the vehicle shall remain open to allow drainage or ventilation. Other specified openings of vehicle shall be sealed to prevent entry of moisture. Processing for closure and ventilation shall meet carrier and transportation requirements.

3.4.1.8.1 Vehicle closure. When specified (see 6.2), each vehicle shall be provided with a vehicle closure kit (commonly called a covered wagon). The closure kit shall be fabricated, assembled, and installed in accordance with Drawing 12260206. All sharp comers of framework and bows where the cloth cover will make contact, such as corners on base of the frame, shall be cushioned with 0.75 in. (19.1 mm) minimum thickness of cushioning material conforming to A-A-1898 and secured in place with tape conforming to type I, class 1 of ASTM D5486. The following deprocessing information shall be marked in DA Form 2258: "REMOVE CLOSURE KIT - COVER AND FRAMEWORK. WHEN CLOSURE KIT IS NO LONGER REQUIRED FOR PROTECTION, RETURN TO DEPOT FOR DISPOSITION".

3.4.1.8.2 Ventilation. The driver's compartment access cover, and transmission access covers, and gaskets shall be removed from the underside of vehicle (see figure 5). Unpainted metal surfaces exposed by removal of these items shall be coated with preservative conforming to grade 4 of MIL-PRF-16173. Screens shall be installed in accordance with Drawings 12260223 and 12260224, and figure 6. The removed access covers and gaskets shall be processed as specified in table III. The following deprocessing information shall be marked in DA Form 2258: "REMOVE SCREENS, INSTALL ACCESS COVERS AND GASKETS BEFORE

3.4.1.8.3 Hatches and doors. Hatches and doors shall be closed and locked from the inside except for the commander's hatch and rear door which shall be secured through the locking ring, with furnished locking devices.

3.4.1.9 Loading. Each vehicle shall be loaded and secured as authorized by the responsible Government transportation office or officer.

3..4.1.9.1 Vehicle lifting and towing. Lifting and towing of the vehicle shall be in accordance with MIL-STD-209 or equivalent approved methods.

3.4.1.9.1.1 Lifting with closure kit installed. When an installed closure kit is specified (see 3.4.1.8.1 and 6.2), the closure kit shall be unfastened and rolled from the front and rear bows to expose lift points prior to attaching slings. After lifting, the closure kit shall be secured in its original position.

3.4.1.9.2 Loading for commercial shipment.

3.4.1.9.2.1 Loading for commercial rail shipment. Loading and securement of commercial rail shipment within the U.S. and Canada shall conform to section 1, General Rules Governing Loading of Commodities on Open Top Cars and section 6, Rules Governing the Loading of Department of Defense materiel on Open Top Cars of the Association of American Railroads. Loading on special rub rail cars shall be in accordance with Section No. 6, figure 87 of Rules Governing the Loading of Department of Defense Materiel on Open Top Cars. Other foreign rail shipments shall conform to the vehicle's transportability guidance technical manual (TM 55-2350-217-15-1) and the applicable transportation regulations.

3.4.1.9.2.2 Loading for other commercial shipment. Loading and securement shall conform to carrier requirements and to applicable transportation regulations. Shipments shall also conform to the vehicle's transportability guidance technical manual (TM 55-2350-217-15-1).

3.4.1.9.3 Loading for military shipment. Guidance for all modes of military shipments shall conform to the vehicle's transportability guidance technical manual (TM 55-2350-217-15-1).

3.4.2 Special requirements. Special requirements for processing shall be of the specified level of protection (see 6.2). Special requirements for Level A shall be as specified in 3.4.2. 1. Special requirements for Level B shall be as specified in 3.4.2.2.

3.4.2.1 Level A. When Level A processing is specified, the following special procedures and operations are required.

3.4.2.1.1 Engine preservation. After completion of all actions which require fuel system operation, the fuel system shall be processed for Level A. Procedures and operations shall be in accordance with the sequence of steps described below.

a. Fuel tank.
    1. Fuel tank shall be drained by removing the access cover and fuel drain plug located under front of the vehicle (see figure 7).
    2. Fuel tank cap and filler screen shall be removed and coated with lubricating oil conforming to grade 30 of MIL-L-21260.
    3. Five (5) gallons (gal) (18.9 liters (L)) of preservative oil conforming to grade 10 of MIL-L-21260 shall be added to the fuel tank.
    4. Fuel drain plug, access cover, filler screen, and fuel tank cap shall be reinstalled.

b. Fuel system.
   1. A preservative container assembly shall be prepared (see figure 1). The selector valve shall be positioned to "off". Preservative conforming to grade 1 of MIL-P-46002 (and dye conforming to MIL-D-81298 if required) shall be added to one compartment. The second compartment shall be reserved for deprocessing.
   2. The fuel supply line shall be disconnected from the fuel filter at the inlet adapter (see figure 8). The preservative container assembly shall be connected to the fuel filter (see figure 9 "C").
   3 . The fuel return line shall be disconnected at the quick disconnect coupling (see figure 8, "A" and "B" in figure 9). The preservative recovery line shall be connected to the vehicle's quick disconnect coupler (see figure 9 "A" and 9 "B"). The end of the recovery line shall be inserted into a recovery container.
   4. The selector valve shall be positioned on the preservative container assembly for flow of preservative.
   5. The engine shall be started and run until the remaining diesel fuel is flushed from the fuel lines and the engine is using preservative as fuel. Continue until 9 quarts (qt) (8.5 L) are collected from the recovery line in the recovery container (fuel mixture collected in the recovery container shall not be used for the processing of other engines).

c. Engine combustion chambers.
   1. The engine shall be allowed to cool (approx. 6 hours) to ambient temperature.
   2. Airflow shall be restricted to the engine. The hose shall be removed at air inlet housing (see figure 8). An air restrictor plate (see figure 10) shall be secured over the opening on the air inlet housing.
   3. The engine shall be cranked for 20 seconds only (engine may fire briefly).
   4. The starter shall be allowed to cool for 10 minutes.
   5. Steps 2 and 3 shall be repeated until approximately 1 qt (0.95 L) of preservative oil is collected in the recovery container or until three repetitions of steps 2 and 3 are completed.
   6. The selector valve of the preservative container assembly shall be positioned to "off". The preservative container assembly shall be disconnected from the fuel filter. The fuel supply line shall be reassembled to the fuel filter.
   7. The preservative recovery line shall be disconnected at the quick disconnect coupling and the fuel return line shall be reassembled.
   8. The air restrictor plate shall be removed.

3.4.2.1.1.1 Preservation through air intake and exhaust systems. With the hose disconnected from the air inlet housing, 1 ounce (oz) (29.6 milliliters (mL)) of preservative oil conforming to grade 30 of MIL-L-21260 shall be atomizer sprayed into the air intake opening.

The hose shall be reconnected to the air intake opening. One ounce of preservative oil conforming to grade 30 of MIL-P-46002 shall be atomizer sprayed into the exhaust opening. The exhaust opening shall be sealed with tape conforming to type II of MIL-T-22085. The following deprocessing instructions shall be marked in DA Form 2258: "REMOVE TAPE FROM EXHAUST OPENING BEFORE STARTING ENGINE".

3.4.2.1.1.2 Preservation through oil level gauge rod opening. After fuel system and combustion chamber processing and oil level preservation in accordance with 3.4.2.1.1 and 3.4.2.1.1.1, the oil level gauge rod shall be removed and 6 oz (177.4 mL) of preservative oil conforming to grade 1 of MIL-P-46002 shall be atomizer sprayed into the crankcase through the oil level gauge rod opening. An extension of sufficient length to permit the spray nozzle to be within the crankcase shall be used. The spray nozzle shall not be submerged in the crankcase oil. After spraying has been accomplished, the oil level gauge rod shall be reinstalled.

3.4.2.1.2 Batteries, cables, and retainers.

3.4.2.1.2.1 Battery supports and retainers. Battery supports and retainers shall be preserved with compound conforming to MIL-C-450.

3.4.2.1.2.2 Dry charged batteries and cables. Dry charged batteries (without electrolyte) shall be installed in the vehicle battery carrier. Battery cables shall be secured to the battery carrier with 0.75 in. wide tape conforming to type IV of ASTM D5330.

3.4.2.1.2.3 Electrolyte. The electrolyte shall be packaged, packed, and marked in accordance with O-S-801 (see table III). The packed electrolyte shall be stowed within the vehicle and independently secured to permit separate removal.

3.4.2.2 Level B. When Level B processing is specified, the following special procedures and operations are required.

3.4.2.2.1 Fuel system preservation. The fuel system shall be prepared for vehicle operation. Unless otherwise specified (see 3.4.2.2.1.1), the fuel tank shall be filled with 40 gal (151.4 L) of diesel fuel conforming to winter grade of A-A-52557.

3.4.2.2.1.1 Special fuel volume requirement. When specified (see 6.2), an increased or decreased volume of fuel shall be placed in the fuel tank.

3.4.2.3 Batteries, cables, and retainers. Batteries, cables, and retainers shall be installed. Batteries shall be filled with electrolyte and fully charged.

3.4.2.4 Air intake and exhaust systems. The air intake and air cleaner shall be assembled and prepared for vehicle operation. Exhaust system shall be prepared for vehicle operation and shall not be sealed.

4. VERIFICATION

4.1 Classification of inspection. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3).
b. Conformance inspection (CI) (see 4.4).

4.2 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed under the following standard (room) ambient conditions:

a. Temperature: 77 ± 18°F (25 +10°C)
b. Relative humidity: uncontrolled room ambient
c. Atmospheric pressure: site pressure

4.3 First article inspection. Unless otherwise specified (see 6.2), the Government for each level of protection shall randomly select one of the first ten production processed vehicles under the production contract for first article inspection. The first article sample shall be inspected as specified in table IV. Approval of the first article sample by the Government shall not relieve the contractor of his obligation to supply vehicles that are fully representative of the first article sample inspected. Any changes or deviations of the production units from the first article sample shall be subject to the approval of the contracting officer.

TABLE IV. Classification of inspections.

Inspection	Requirement	Inspection method
a. First article inspection:		
Fuel System (Level A) Preservation	3.4.2.1.1	4.5.1
COEI/BII Packaging	3.4.1.4	4.5.2
COEI/BII Stowage	3.4.1.7.1	4.5.2
b. CI:		
Disassembly	3.4.1.1	4.5.3
Cleaning and Drying	3.4.1.2	4.5.3
Preservation	3.4.1.3	4.5.3
Packaging	3.4.1.4	4.5.2.1,4.5.3
Packing	3.4.1.5	4.5.3
Marking	3.4.1.6	4.5.3
Stowage	3.4.1.7	4.5.3
Closure	3.4.1.8	4.5.3
Loading	3.4.1.9	4.5.3

4.3.1 First article inspection routine. The first article sample(s) shall first be subjected to the CI of 4.4 and passed; then shall be followed by the first article inspection specified in table IV.

4.3.2 First article inspection failure. Deficiencies found during, or as a result of, the first article inspection shall be cause for rejection of the first article sample until evidence has been provided by the contractor that corrective action has been taken to eliminate the deficiency. Any deficiency found during, or as a result of the first article inspection shall be evidence that all items already produced prior to completion of the first article test are similarly deficient unless contrary evidence satisfactory to the contracting officer is furnished by the contractor. Such deficiencies on all items shall be corrected by the contractor. The Government will not accept products until first article inspection is completed to the satisfaction of the Government.

4.4 CI 100% inspection. CI shall be conducted on all items (100% inspection) in accordance with table IV. Noncompliance with any of the specified requirements in section 3 shall be cause for rejection of the item.

4.5.1 CI failure. Failure of the item to pass CI inspection shall be cause for the Government to refuse acceptance of the item. Any item containing one or more defects either shall not be submitted for Government acceptance or shall be corrected and reinspected and resubmitted without defects for Government acceptance. Resubmitted items shall be kept separate from new items and shall be clearly identified as resubmitted items.

4.5 Methods of inspection.

4.5.1 First article inspection of Level A fuel system processing. For first article inspection, the fuel system, including the fuel lines, fuel pump, and engine, shall be disassembled to the extent necessary to permit visual examination of preserved surfaces. Exposed surfaces shall have a coating of preservative. Oil soluble red dye conforming to MIL-D-81298 shall be dissolved in the preservative to permit visual examination of preserved combustion chambers.

4.5.2 First article inspection of COEI, BII, and disassembled items. For first article inspection, the method of preservation for COEI and BII shall be inspected in accordance with MIL-STD-2073-l. Inspection of the methods of preservation shall include cleaning, preservation, packaging, and marking. Rough handling testing shall apply only to exterior containers.

4.5.2.1 CI of COEI, BII, and disassembled items. For CI, the method of preservation for COEI and BII shall be inspected in accordance with the quality assurance provisions specified in MIL-STD-2073-1. Inspection of the methods of preservation shall include cleaning, preservation, packaging, and marking. Inspection of the methods of preservation shall not include rough handling testing.

4.5.3 CI of processing. The vehicle processing shall be inspected visually for conformance to the requirements listed in table IV. The cooling system processing shall be tested using a hydrometer conforming to MIL-T-37402. The COEI, BII, and disassembled items shall be tested in accordance with rough handling requirements of MIL-STD-2073-1.

5. PACKAGING

This section is not applicable to this specification.

6. NOTES

(This section is not mandatory, but contains information of a general or explanatory nature that may be helpful.)

6.1 Intended use. This document specifies processing of the M109A2, M109A3, M109A4, and M109A5 Self-Propelled Howitzers for shipment and storage. This document is cited in a contract or purchase order to obtain protection from known or anticipated conditions of shipment, handling, and storage.

6.1.1 Use of Level A, maximum protection. Maximum protection, called Level A, is processing for the most severe conditions of shipment, handling, and storage. Maximum protection should be applied to protect vehicles where the period of shipment, handling, and

storage will exceed 90 days from the date of processing. Level A protection should be applied for long-term open storage and for deck loaded marine shipment.

6.1.2 Use of Level B, intermediate protection. Intermediate protection, called Level B, is processing for known favorable conditions of shipment, handling, and storage. Intermediate protection should be applied when Level A protection is not required and when the period of shipment, handling, and storage will not exceed 90 days from the date of processing. Level B protection should be applied for domestic shipment and known favorable overseas shipment excluding marine deck loading.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.
b. Applicable level of protection (see 1.2 and 3.4.2).
c. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
d. Whether first article inspection is required (see 3.1).
e. The mode(s) of transport and transportability guidance if shipment by special transport mode is required (see 3.4.1.1.1 and 3.4.1.1.2).
f. If vehicle surfaces and components are to be preserved other than as specified (see 3.4.1.3).
g. If preparation of the cooling system for shipment and storage in a tropic or arctic environment is required (see 3.4.1.3.5, 3.4.1.3.5.1, and 3.4.1.3.5.2).
h. If packaging or packing of COEI and BII are to be other than as specified (see 3.4.1.4 and 3.4.1.5).
i. If special marking is required (see 3.4.1.6 through 3.4.1.6.4. 1).
j. If stowage is to be other than as specified herein (see 3.4.1.7 and 3.4.1.7.1).
k. Whether special stowage is required (see 3.4.1.7.2).
l. If a vehicle closure kit is to be provided (see 3.4.1.8.1) and additional marking requirements for the closure kit (see 3.4.1.6.4.1).
m. If an increased or decreased volume of fuel is required (see 3.4.2.2.1.1).
n. Arrangements for first article inspection and rights of the Government (see 4.3 and 6.3).

6.3 First article. When first article inspection is required (see 6.2), the contracting officer should provide specific guidance to offerors whether the item(s) should be a first article sample, a first production item, of a standard production item from the contractor's current inventory and the number of items to be tested as specified in 4.3, 4.3.1 and 4.3.2. The contracting officer should include specific instructions in acquisition document regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for first article inspection to those bidders offering a product which has been previously acquired or tested

by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.4 Safety precaution. Caution should be exercised in handling fire extinguisher cylinders. Cylinders should not be dropped, permitted to strike each other, or handled roughly. Extreme care should be exercised during the reinstallation operation to avoid tripping the fire extinguisher control system (see 3.4.1.3.10).

6.5 Definitions.

6.5.1 Packaging. "Packaging" is the application or use of adequate protective measures to prevent deterioration including, as applicable, the use of appropriate cleaning procedures, preservatives, protective wrappings, cushioning, containers, and complete identification marking.

6.5.2 Recovered materials. "Recovered materials" means materials that have been collected or recovered from solid waste (see 6.5.3).

6.5.3 Solid waste. "Solid waste" means (a) any garbage, refuse, or sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility;, and (b) other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. It does not include solid or dissolved material in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Clean Water Act, (33 U.S.C. 1342 et seq.), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) (source: Federal Acquisition Regulations, section 23.402).

6.6 Marking. MIL-HDBK-129 "Military Markings" provides information on marking document MIL-STD-129. It should be used as a guide.

6.7 Subject term (key word) listings

Closure kit
Container
Packaging
Packing
Preservation
Level A vehicle stowage
Level B vehicle stowage
Stowage

6.8 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

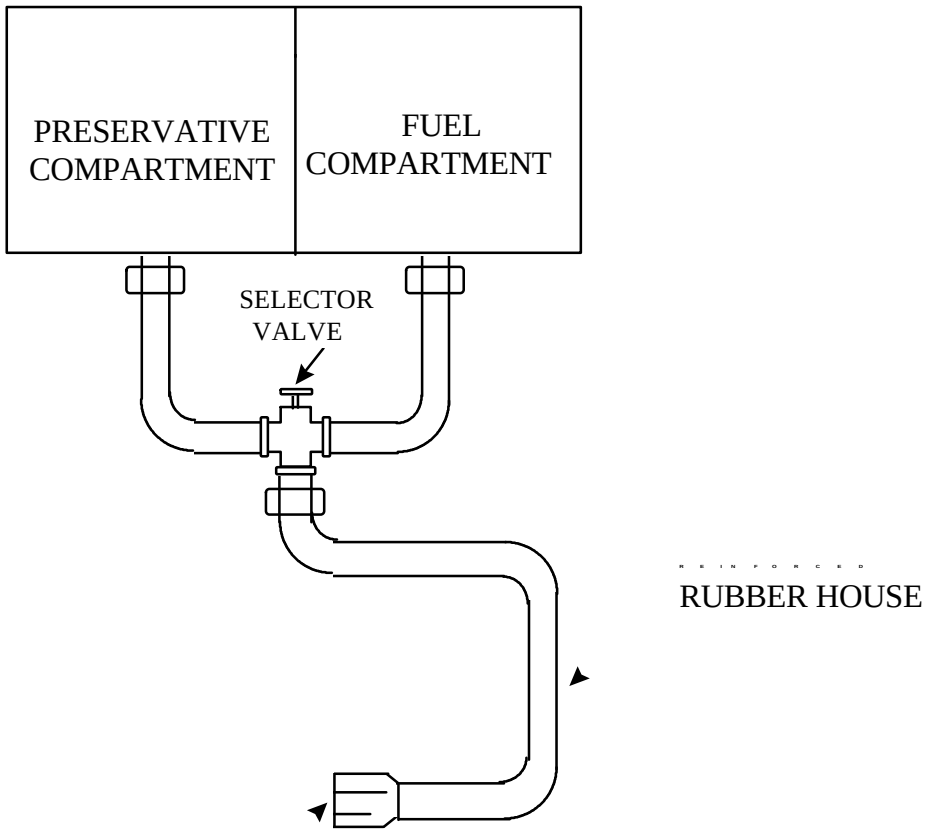


FIGURE 1. Preservative container assembly.

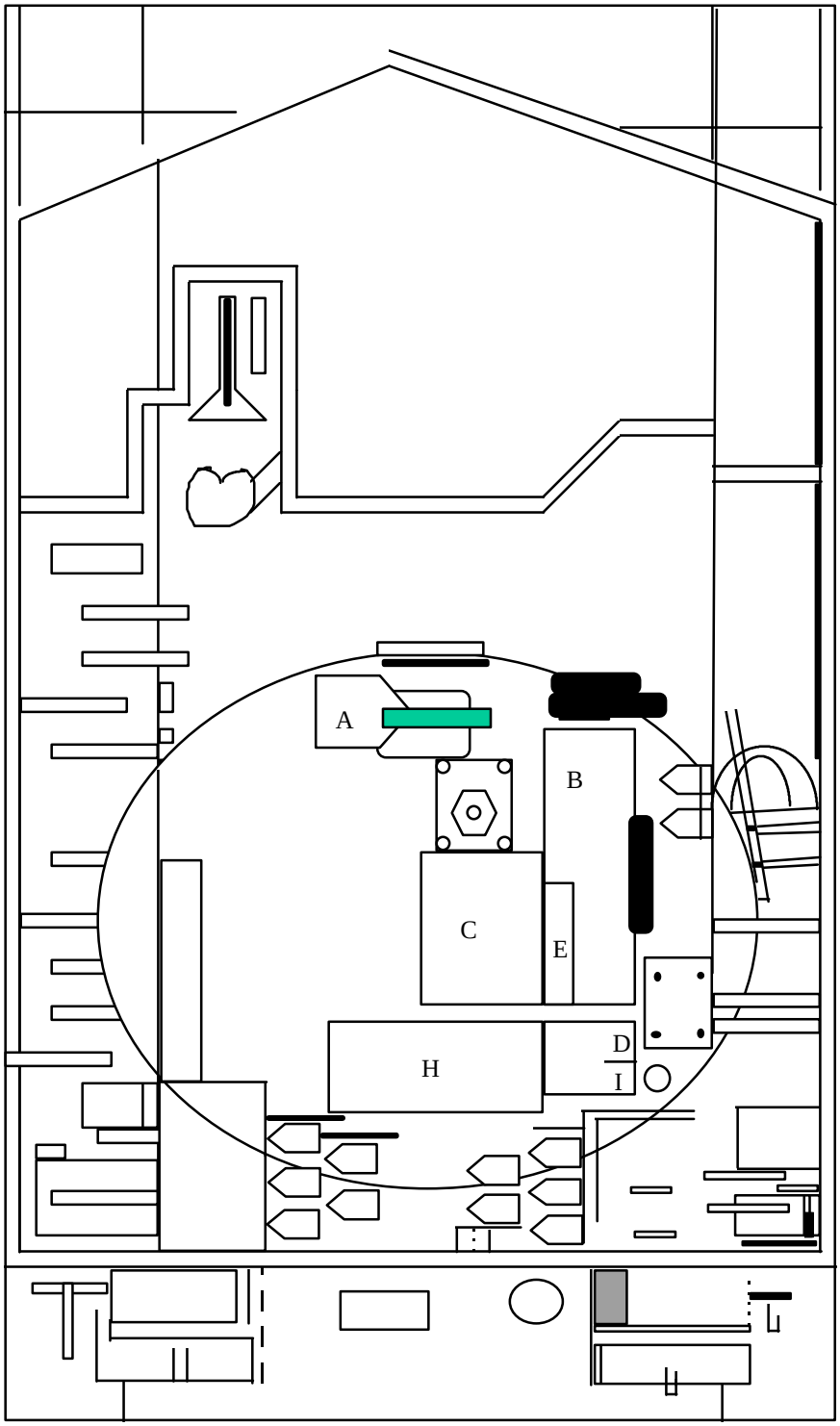
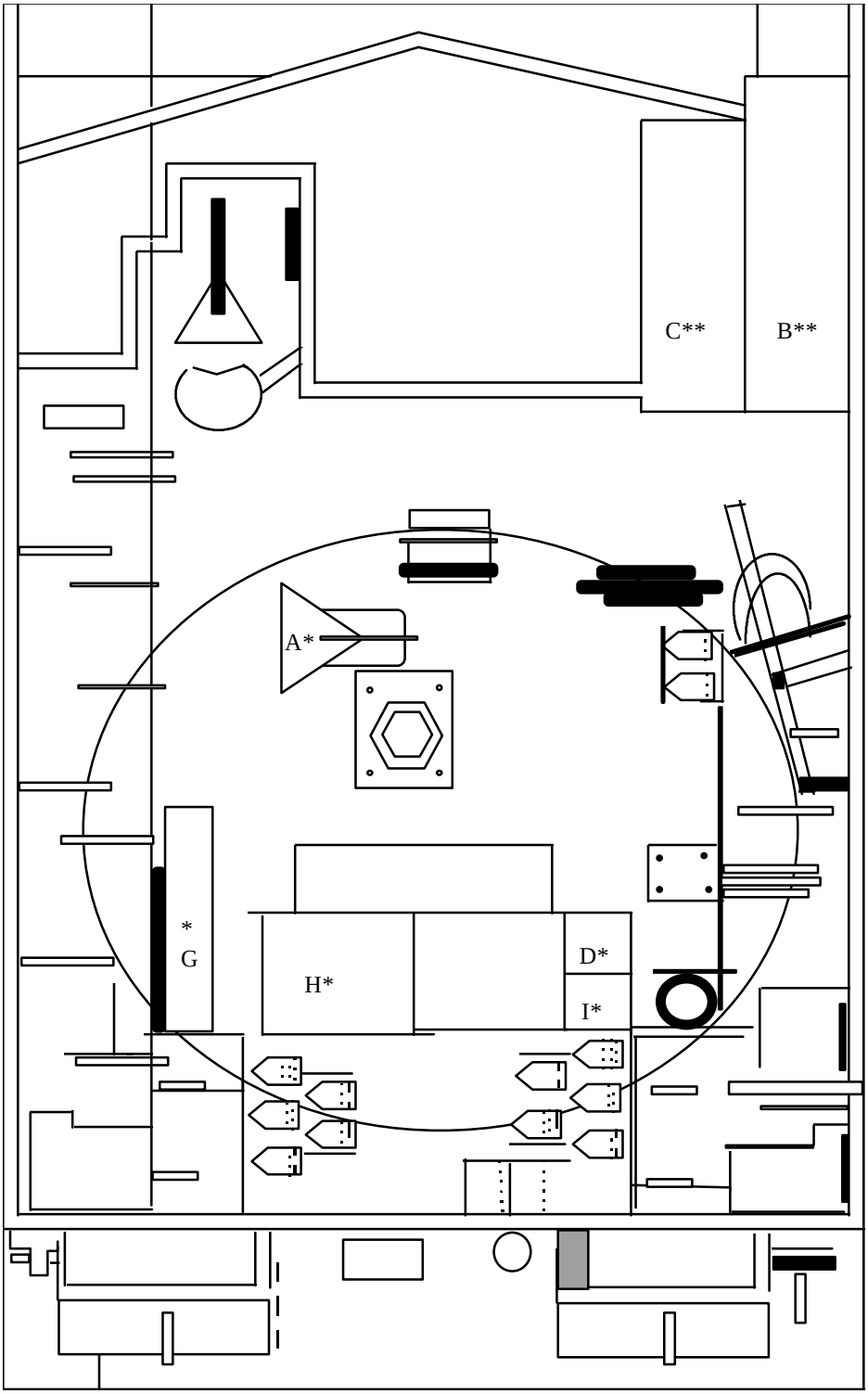


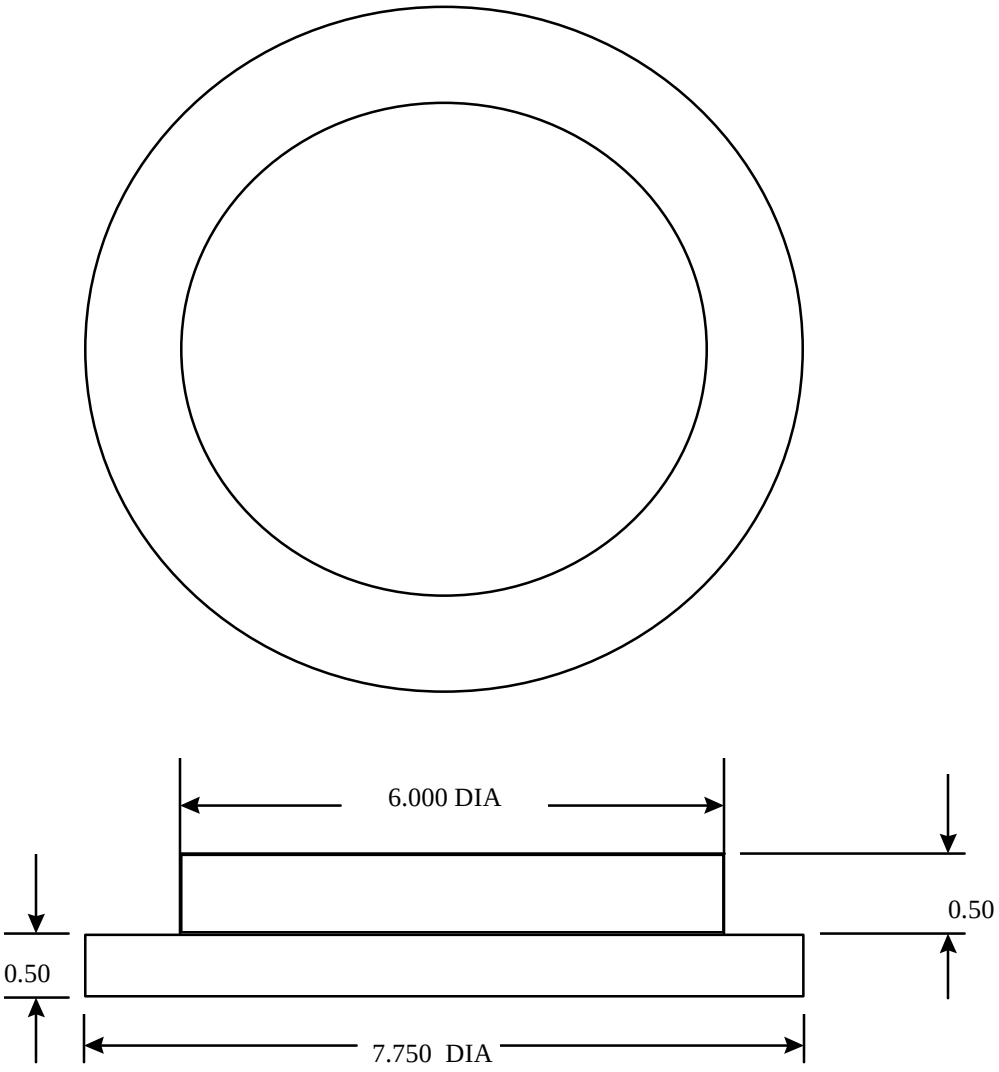
FIGURE 2. Stowage locations - interior of vehicle.



** ON PLAT - FORM ASSEMBLY

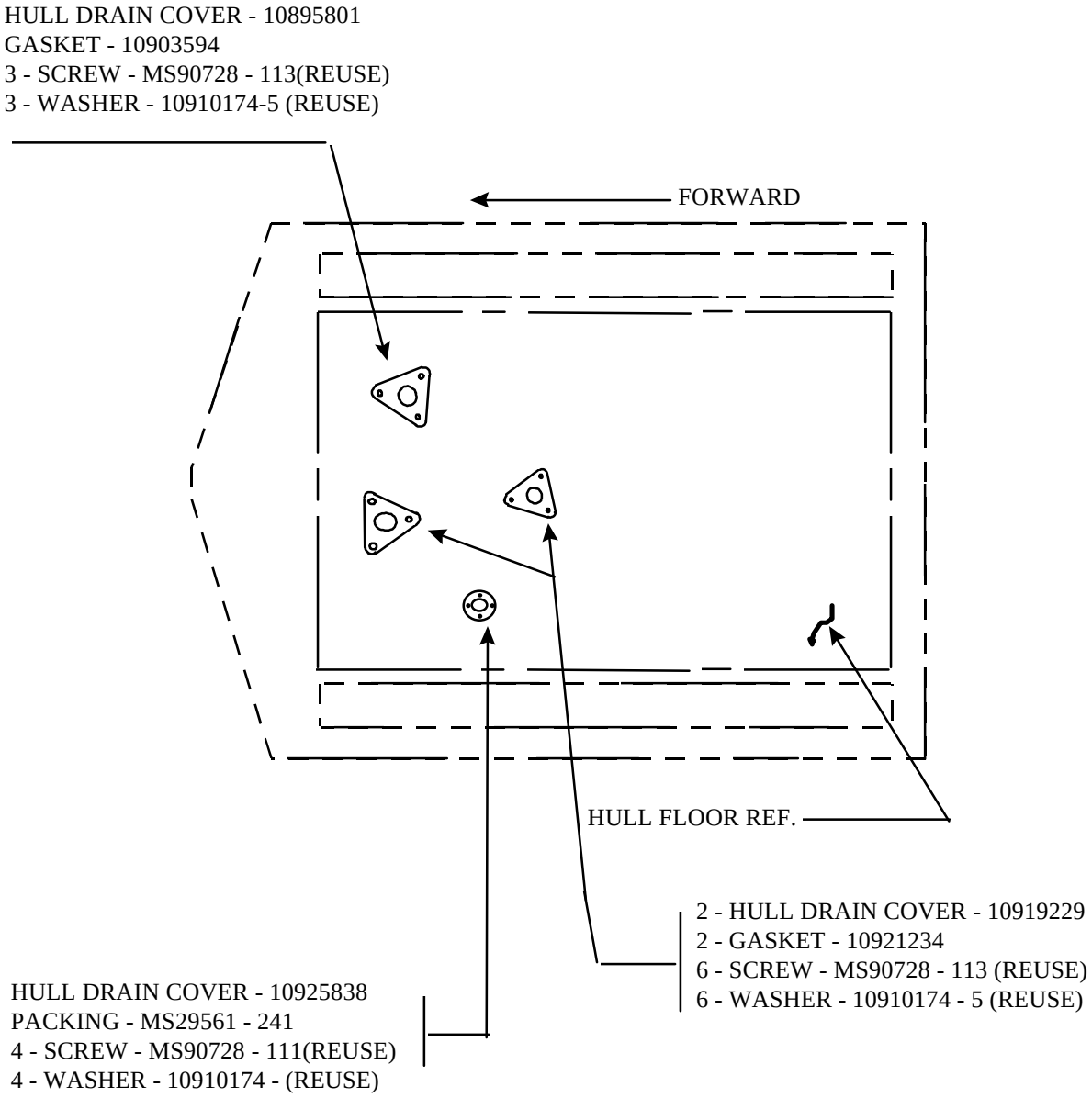
* INTERIOR OF VEHICLE

FIGURE 3. Special stowage locations - interior of vehicle and on the platform assembly.



NOTE: Secure plywood together with 6D nails. Wrap plug with MIL-B-121 grade C and aluminum foil conforming to QQ-A-1876.

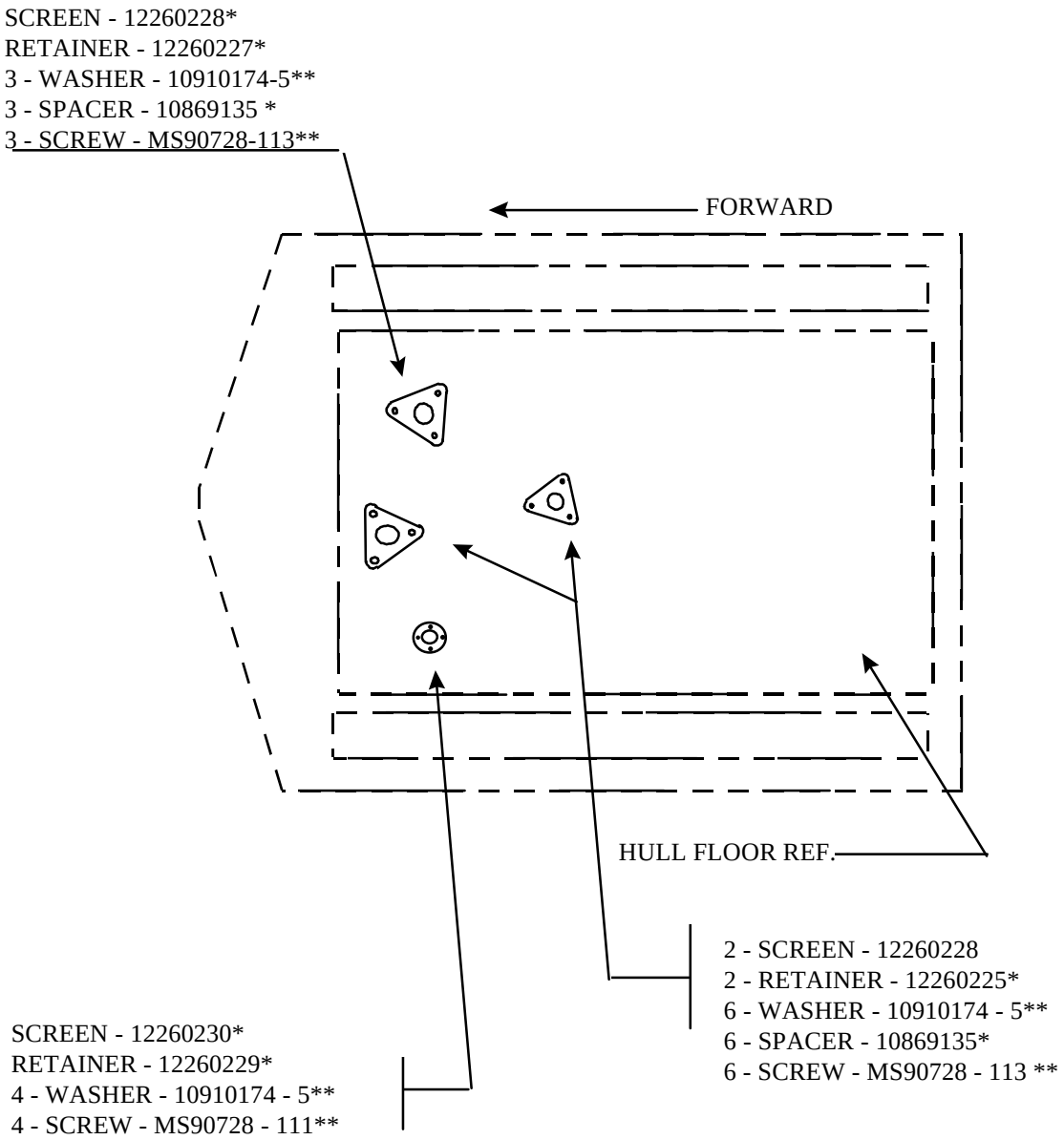
FIGURE 4. Muzzle plug.



NOTES:

1. (Reuse) - These parts will be used with the installation of the ventilation kit 12260223.
2. Reuse if item is in good condition; for replacements use comparable 1/2 13 UNC-2A 1-1/4 inch long screws for MS90728-111 and 1/2 13 UNC-2A 1-1/2 inch long screws for MS90728-113.

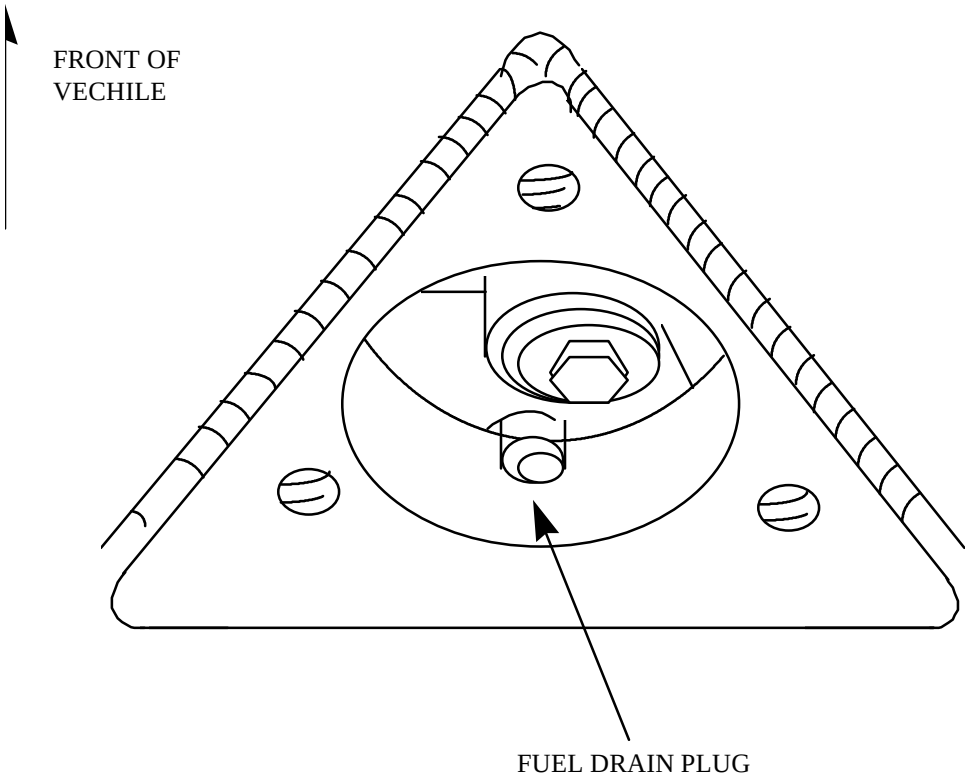
FIGURE 5. Gasket removal.



NOTES:

1. * These parts are included in ventilation kit 12260223.
2. ** These part numbers are from the removal of access covers.
3. Reuse if item is in good condition; for replacements use comparable 12 13 UNC-2A 1-1/4 inch long screws for MS90728-111 and 1/2 13 UNC-2A 1-1/2 inch long screws for MS90728-113.

FIGURE 6. Ventilation kit installation.



BOTTOM VIEW OF VEHICLE

FIGURE 7. Fuel drain plug.

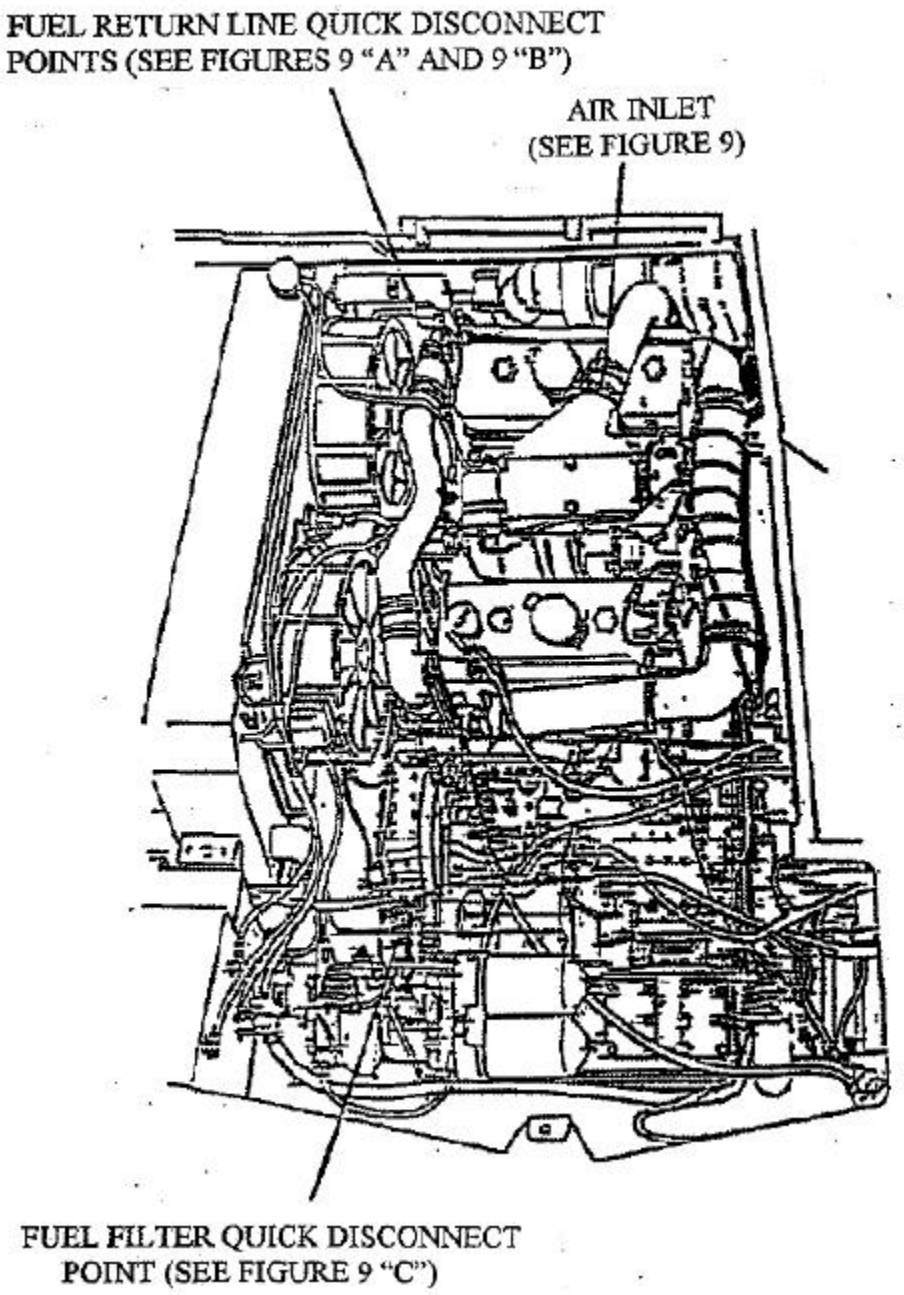
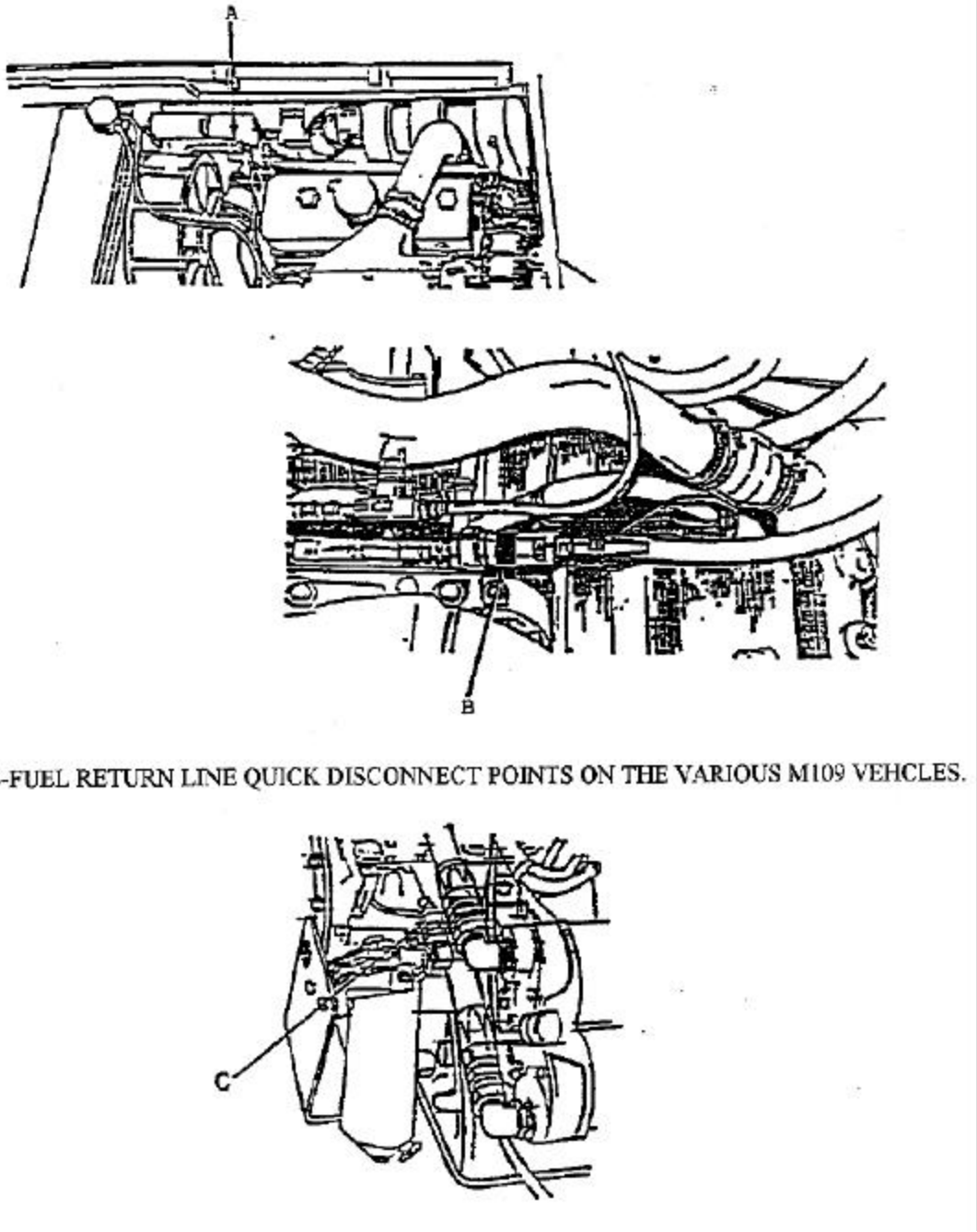
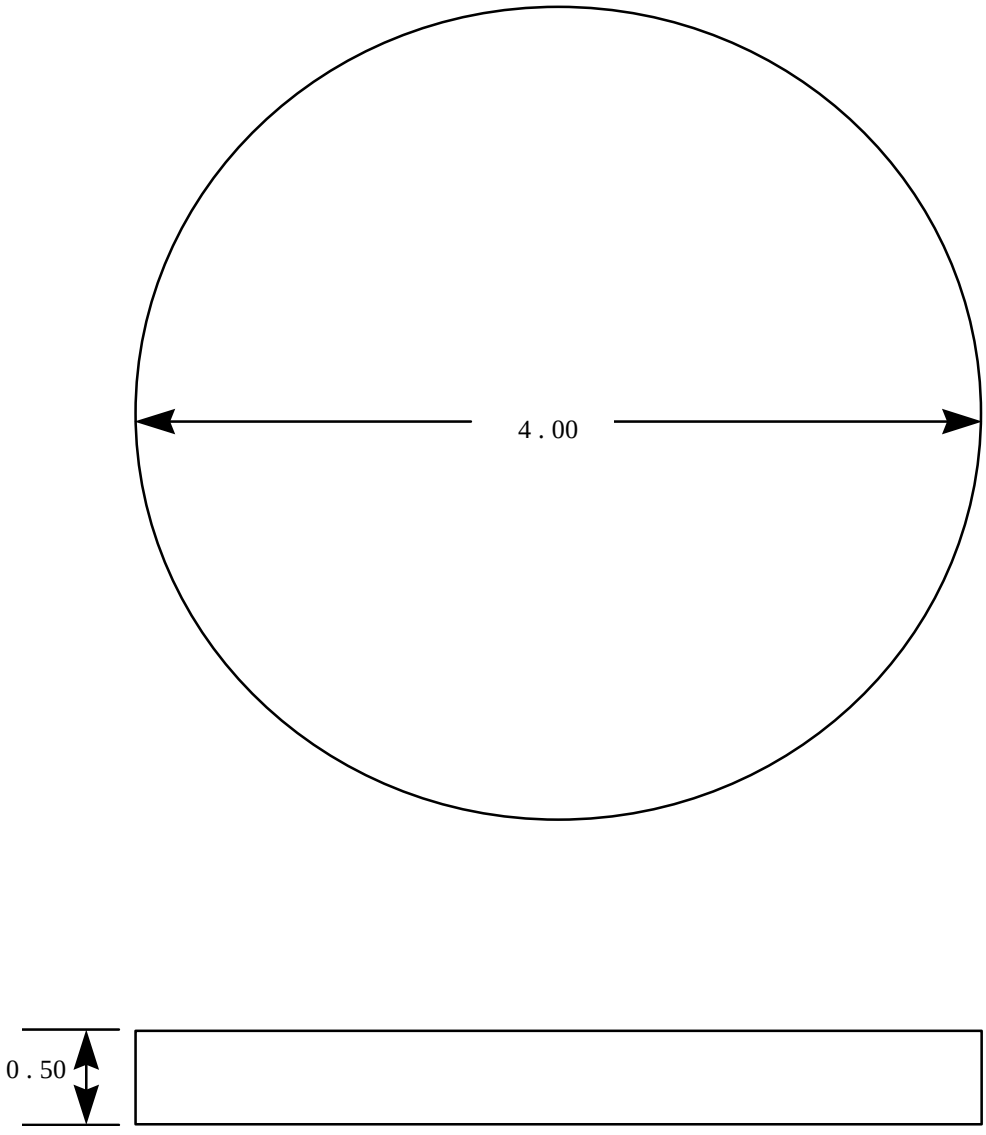


FIGURE 8. Engine preservation points.



A&B-FUEL RETURN LINE QUICK DISCONNECT POINTS ON THE VARIOUS M109 VEHICLES.

FIGURE 9. Engine preservation quick disconnect points.



NOTE: Material: 0.50 inch steel plate.

FIGURE 10. Air restrictor plate.